Remarks

The specification has been objected to as failing to provide proper antecedent for the claimed subject matter of claims 6 and 22.

In regard to claim 6, which recites a molar ratio of titanium tetrachloride to phthalonitrile of about 0.25:1 to about 1:1, the attention of the Examiner is respectfully directed to page 10, lines 6-7, which recites that "the molar ratio of titanium tetrachloride to phthalonitrile is preferably about 0.25:1 to about 1:1."

In regard to claim 22, the specification is amended by inserting, following line 7 on page 9, the following:

"Preferably, the Cl-TiOPc in the nanoparticulate cocrystalline composition contains about 0.5 wt.% to about 2.0 wt.% chlorine."

In light of this amendment, withdrawal of the objection to the specification is respectfully requested.

Claims 10, 11, and 12 have been rejected under 35 U.S.C. §112, second paragraph, over the question of whether "mixture" applies to the first crystalline pigment mixture or the amorphous pigment mixture. Claim 10 is now amended to characterize the mixture as "comprising phthalonitrile and titanium tetrachloride."

In light of this amendment, withdrawal of the §112, second paragraph, of claims 10, 11, and 12 is respectfully requested.

Claims 1-16 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Miyauchi et al., U.S. Patent No. 5,972,551 ("Miyauchi"), in view of Molaire et al., U.S. Patent No. 5,629,418 ("Molaire '418"). This rejection is respectfully traversed.

As recited in instant claim 1, the process of the present invention for forming an amorphous TiOPc/TiOFPc pigment mixture containing a low concentration of TiOFPc, includes three steps: subjecting a mixture comprising phthalonitrile and titanium tetrachloride to reaction conditions effective to form lightly chlorine-substituted crude crystalline Cl-TiOPc; combining the lightly chlorine-substituted crude crystalline Cl-TiOPc with crude crystalline TiOFPc to form a crude crystalline pigment mixture; and treating the crude crystalline pigment mixture under conditions effective to form a substantially amorphous pigment mixture of Cl-TiOPc and TiOFPc.

Miyauchi, at column 4, line 63, to column 5, line 38, describes the preparation of titanyl phthalocyanine by the reaction of phthalonitrile and titanium tetrachloride, which may be treated with any of a variety of organic solvents, "thereby providing the crystalline titanyl phthalocyanine of the present invention." (column 5, lines18-19, emphasis added) "Alternatively, the crystalline titanyl phthalocyanine may be obtained as a result of mixing the titanyl phthalocyanine...for a sufficient period of time, or of milling it with mechanical strain force." (column 5, lines 34-38, emphasis added)

At column 5, lines 51-58, Miyauchi further discloses that the titanyl phthalocyanine of the present invention can be used with other electric charge generation materials, for example "α-type, β-type, Y-type or amorphous titanyl phthalocyanine, which are different in crystal form from the titanyl phthalocyanine of the present invention...." (emphasis added)

The aforementioned disclosure in Miyauchi of the preparation of crystalline titanyl phthalocyanine clearly relates to only the first of the three steps of the process of the present invention for forming an amorphous TiOPc/TiOFPc pigment mixture. As acknowledged in the Office Action, Miyauchi contains no disclosure of TiOFPc, which is employed in the second step of the applicants' process.

The disclosure of Molaire '418 is relied upon to supply the disclosure, lacking in Miyauchi, of TiOFPc. There is no citation of a specific disclosure of Molaire '418 in the Office Action, but the reference teaches, at column 4, line 55, to column 5, line 9, that crude TiOFPc pigment is dissolved in acid, mixed with water to precipitate the pigment as amorphous TiOFPc pigment, washed to remove residual acid, and collected for use as amorphous TiOFPc, which is kept wet and maintained at a temperature below 80°C, more preferably, below 50°C. Alternatively, in a less preferred embodiment, the amorphous pigment is dried and crystallized by treatment with an organic solvent.

There is no suggestion in Molaire '418 to combine, in accordance with the present invention, a minor amount of TiOFPc pigment, either in amorphous or crystalline form, with a major amount of lightly chlorine-substituted crude crystalline Cl-TiOPc. Furthermore, the disclosure of Molaire '418 in combination with that of Miyauchi fails to suggest or render obvious the process of the present invention. Withdrawal of the §103(a) rejection of claims 1-16 is therefore respectfully requested.

Since the aforementioned §103(a) rejection was applied only to claims 1-16, the applicants conclude that patentable matter is contained in claim 17 and its dependent claims 18-23. Therefore claim 17 is currently amended to an independent form that includes the limitations of claim 1.

Claims 1-23 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-14 of co-pending application Serial No. 10/655,388. In response, a Terminal Disclaimer is enclosed herewith.

Claims 1-23 remain in this case, whose prompt allowance is earnestly solicited.

Respectfully submitted,

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Date

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